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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,559	02/09/2004	Clifford F. Biddulph	PVOZ 2 00015	8972

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EXAMINER
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ZHENG, LOIS L

ART UNIT	PAPER NUMBER
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1742

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/774,559	Applicant(s) BIDDULPH ET AL.	
	Examiner Lois Zheng	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 19-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 19-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Invention Group I, claims 1-9 and 19-20, in the reply filed on 31 May 2007 is acknowledged. The traversal is on the ground(s) that applicant does not believe there is an undue burden on the examiner to search both invention groups. This is not found persuasive because invention group II, directed to a coating method, requires additional search efforts for the claimed coating process steps while invention group II, directed to a coating solution, only requires search for the coating composition.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 10-18 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Invention Group II, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 31 May 2007.

### ***Status of Claims***

3. Claims 1 and 19-20 are amended in view of applicant's amendment filed 31 May 2007. Claims 10-18 are canceled. New claims 21-23 are added. Therefore, claims 1-9 and 19-23 are currently under examination.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/07902(WO'902) in view of Huvar US 4,349,392(Huvar).

The examiner would like to thank the applicant for providing the translation for WO'902 and will rely on the translation for the teachings of WO'902.

WO'902 teaches an anticorrosive aqueous acidic coating solution free of hexavalent chromium, wherein the coating solution comprises 0.02mol/l – 0.58mol/l of Cr(III), 0.1mol/l – 0.42mol/l of phosphate ions incorporated from phosphoric acid or sodium phosphate, 0.001mol/l – 0.1mol/l of iron, cobalt and/or nickel ions. WO'902 also teaches that the coating solution comprises one or more citric acid, tartaric acid, malonic acid as complexing agents. The pH of the coating solution is maintained between 1 and 4 by nitric or sulfuric acids. WO'902 further teaches that the phosphate is favorably added for the formation of a dark conversion coating and iron, cobalt and/or nickel are added for the formation of a black color coating. See last paragraph on page 1 – bottom of page 2 of the translation.

Regarding claims 1-9, 19-20 and 22-23, the one or more citric acid, tartaric acid and malonic acid as taught by WO'902 read on the claimed chelate. The nitrate and sulfate ions from the nitric or sulfuric acid used for pH control as taught by WO'902 read on the claimed sulfate and/or nitrate ions. The iron, cobalt and nickel ions as taught by WO'902 read on the claimed transition metal or metalloid.

In addition, the component concentrations of Cr(III) ions, phosphorous anions, Fe/Co/Ni ions, chelate, the pH value ranges and the Cr(III) to Fe/Co/Ni ratio range(i.e.

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as calculated from the concentrations of Cr(III) ions and Fe/Co/Ni ions) in the coating solution of WO'902 overlap the claimed component concentration ranges, the claimed pH value range and the claimed Cr(III) to transitional metal or metalloid range.

Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed component concentrations and pH range from the disclosed ranges of WO'902 would have been obvious to one skilled in the art since WO'902 teaches the same utilities in its disclosed component concentration ranges, pH value range, and Cr(III) to Fe/Co/Ni ratio range.

However, WO'902 does not teach the claimed chelate concentration range as recited in instant claims 7 and 19. WO'902 also does not explicitly teach the claimed sulfate and/or nitrate ion concentrations as recited in claims 1 and 19-20.

Huvar teaches a Cr(III) containing acidic coating solution substantially free of Cr(VI), wherein the coating solution comprises Cr(III) ions, iron/cobalt/nickel ions, nitrate and sulfate ions, and carboxylic acids such as citric acid, tartaric acid and malonic acid(col. 3 line 39-col. 4 line 28, col. 6 lines 56-68). Huvar further teaches that sulfate ions is present in an amount of upto about 15g/l(col. 3 line 67-col. 4 line 5) and the carboxylic acid is present in an amount of about 0.05 to about 4.0g/l(col. 6 lines 1-33).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the sulfate ions in an amount of upto about 15g/l and carboxylic acids in an amount of about 0.05 to about 4.0g/l as taught by Huvar into the coating solution of WO'902 since Huvar teaches that sulfate ions is beneficial in achieving desired

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passivation and increase clarity and carboxylic acids improve initial hardness to the chromate film as taught by Huvar.

In addition, the sulfate and carboxylic acid concentration ranges as taught by WO'902 in view of Huvar overlap the claimed sulfate and chelate concentration ranges as recited in claims 1, 7 and 19-20. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed sulfate and chelate concentration ranges from the disclosed sulfate and carboxylic acid concentration ranges of WO'902 in view of Huvar would have been obvious to one skilled in the art since WO'902 in view of Huvar teach the same utilities in their disclosed sulfate and carboxylic acid concentration ranges.

Regarding claim 21, WO'902 teaches that hypophosphite and phosphate can be used to form a dark conversion coating (page 2, middle section). The examiner considers this teaching to meet the limitation of claim 21 since claim 21 uses "consisting essentially of", which is a semi-open transitional phrase that does not exclude any additional elements that do not materially affect the characteristics of applicant's invention. It is well settled that if an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989). See MPEP 2111.03 [R-2]. In

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this case, it is applicant's burden to provide evidence that the presence of hypophosphite materially changes the characteristics of the claimed coating solution.

6. Claims 1-9 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima et al. US 6,719,852 B2(Oshima) in view of WO 02/07902(WO'902).

Oshima teaches an aqueous acidic coating solution that is free of hexavalent chromium(abstract), wherein the coating solution comprises 0.2-5g/l of trivalent chromium ions(col. 4 lines 14-21), 0.2-10g/l of cobalt ions(col. 4 lines 33-45), 1-50g/l of inorganic salts of nitric or sulfuric acid(col. 4 lines 54-60), 0.1-50g/l of phosphoric acid (col. 4 lines 61-67) and 1-30g/l of carboxylic acids, such as citric acid, tartartic acid, malonic acid and succinic acid (col. 5 lines 1-7) and 0.2-13g/l of oxalic acid(col. 4 lines 27-32). The coating solution of Oshima has a pH of 0.5-4(col. 5 lines 8-10).

Regarding claims 1-9, 19-20 and 22-23, the oxalic acid or any of the carboxylic acids listed above as taught by Oshima read on the claimed chelate. The nitrate and sulfate ions from the inorganic salts of nitric or sulfuric acid as taught by Oshima read on the claimed sulfate and/or nitrate ions. The cobalt ions as taught by Oshima read on the claimed transition metal or metalloid.

However, even though Oshima teaches various color finishes in its examples (Table 4). Oshima does not explicitly teach that the coating solution can produce a black chromate coating as claimed.

The teachings of WO'902 are discussed in paragraph 6 above. WO'902 further teaches that to produce a black finish, the concentration of cobalt should be between 0.001 mol/l and 0.1 mol/l(i.e. 0.059 – 5.9g/l)(translation, page 2 lines 4-6 from the

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bottom). Black pigments can also be added according to WO'902(translation, page 3 two lines after "Day 2").

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated Co concentration of 0.001-0.1mol/l or the black color pigments as taught by WO'902 into the coating solution of Oshima in order to produce a black chromate coating.

In addition, the component concentrations of Cr(III) ions, phosphorous anions, Co ions, oxalic acid and/or carboxylic acids, Cr(III) ion/Co ion ratio and the pH value in the coating solution of Oshima in view of WO'902 overlap the claimed component concentration ranges and the claimed pH value range. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed component concentrations, Cr(III)/transitional metal or metalloid ion ratio and pH ranges from the disclosed ranges of Oshima in view of WO'902 would have been obvious to one skilled in the art since Oshima in view of WO'902 teach the same utilities in their disclosed component concentration, Cr(III)/Co ion ratio and pH value ranges.

Regarding claim 21, the claimed phosphorous anions consisting essentially of phosphate anions is within the scope of Oshima's invention(col. 4 lines 61-67).

### ***Response to Arguments***

7. Applicant's arguments filed 31 May 2007 have been fully considered but they are not persuasive.

In the remarks, applicant argues that the references do not teach the claimed sulfate or nitrate ion concentrations. In addition, the examples of WO'902 show lower levels of nitric acid as claimed.

The examiner does not find applicant's argument persuasive because the Huvar reference is incorporated into the teachings of WO'902 for its teaching of adding sulfate for improved passivation. Therefore, the combination of WO'902 and Huvar teaches the claimed sulfate ion in the claimed concentration, which meets the limitation of the amended sulfate and/or nitrate concentrations as amended in claims 1 and 19-20.

Applicant also argues that the reference(i.e. presumably the WO'902 reference) do not address applying a black coating to a non-alloy zinc coated substrate.

The examiner does not find applicant's argument persuasive since the claimed invention is directed to a coating composition. The application of this coating composition to a non-alloy zinc coated substrate or any other type of substrate is directed to the intended use of this coating composition, therefore, does not lend patentability to the instant claims.

Applicant further argues that WO'902 requires the presence of hypophosphite for coating solution having a pH of 3 or higher. The instantly claimed coating solution can be used to form black coating with pH of 3 or higher without adding hypophosphite.

The examiner does not find applicant's argument persuasive since the pH range as taught by WO'902 is 1-4, preferably 1-3(page 2, line 5 from the top). Therefore, the scope of WO'902 includes lower pH coating solution wherein the presence of hypophosphite is not critical. In addition, claim 21 uses semi-open transitional phrase

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"consisting essentially of" when reciting the phosphorous anions, which allows the presence of hypophosphite so long as it does not materially affect the characteristics of the claimed coating solution. The independent claims 1 and 19-20 use open transitional phrases "comprising" which also allows the presence of hypophosphite.

Applicant further argues that the instant invention does not need the addition of silicon dioxide, but WO'902 teaches the addition of silicon dioxide.

The examiner does not find applicant's argument persuasive since the instant claims use open transitional phrases "comprising" which allows the presence of additional components such as silicon dioxide.

Applicant further argues that WO'902 and Huvar are not combinable since Huvar's coating is based on cerium that does not produce a black coating. The use of hydrogen peroxide as an oxidizing agent as taught by Huvar is also not suitable for a coating solution to produce a black coating on zinc coated surface. Furthermore, the trivalent chromium in a coating solution containing oxidizing agent and cerium, as the coating solution of Huvar, may be oxidized into hexavalent chromium as taught by Oshima.

The examiner does not find applicant's argument persuasive since Huvar is only be used as a secondary reference. It is being incorporated into the teachings of WO'902 for its teaching of benefits of adding sulfate ions and carboxylic acids. Therefore, the coating solution as taught by WO'902 in view of Huvar does not contain hydrogen peroxide and cerium ions and would not have caused problems as alleged by

the applicant. In addition, WO'902 teaches that its coating solution produces a black coating as claimed.

Applicant further argues that the combination of WO'902 and Huvar is only made by the Examiner in hindsight.

The examiner does not find applicant's argument persuasive since the proper motivations have been provided to incorporate sulfate and carboxylic acid as taught by Huvar into the coating solution of WO'902.

Applicant further argues that Oshima differs from the claimed invention because it does not teach that its coating solution produces a black coating. Oshima also does not recognize adding cobalt to result in a black coating. In addition, Oshima requires oxalic acid and a silicon compound. Furthermore, Oshima does not teach the claimed chelate or the claimed sulfate or nitrate ion concentration range. Applicant alleges that the combination of Oshima and WO'902 is based on hindsight.

The examiner does not find applicant's argument persuasive since the oxalic acid as taught by Oshima reads on the claimed chelate. The sulfate or nitrate concentration ranges as taught by Oshima read on the claimed sulfate or nitrate concentration ranges. The claimed cobalt is also found in Oshima with overlapping concentration range. In addition, the claimed coating solution does not exclude the presence of silicon compound since the instant claims use open transitional phrase "comprising" which allows the presence of additional component in the coating solution. The examiner admits that Oshima does not explicitly teach that its coating solution produces a black coating. However, the secondary reference WO'902 teaches that adding a certain

amount of cobalt or adding black pigment can produce a black coating. Therefore, one of ordinary skill in the art, looking to form a black conversion coating, would have found it obvious to adjust the cobalt concentration in the coating solution of Oshima to 0.001-0.1M or to add black pigments in order to produce a black finish coating as taught by WO'902.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LLZ

  
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